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Cover: American Oystercatcher (*Haematopus palliatus*). Ocean City Inlet, Maryland, 9 December 2005. Photographed by Bill Hubick.

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EDITOR'S NOTE

In this issue, Jan G. Reese summarizes the ingress of American Oystercatchers (*Haematopus palliatus*) into the Chesapeake Bay. Clive G. Harris and W. Scott Young document an Orange-Crowned Warbler (*Leiothlypis celata*) with a deficit in carotenoid deposition. Mark S. Johnson and Amanda K. Subolefsky report on 2022 fall banding at Harford Glen in Harford County. John B. (J.B.) Churchill sums up the Maryland Christmas Bird Counts that took place during December 2022 and January 2023. Ikumi Kayama recaps the 2023 Maryland Mid-winter Bird Count. Sue A. Ricciardi reports on the 2023 spring raptor migration at Fort Smallwood Park, Anne Arundel County. The fall issue concludes by featuring American Oystercatcher artwork by Diane M. Ford, Ikumi Kayama, and Ellen M. Lawler.

Species List Order

Chesser, R.T., S.M. Billerman, K.J. Burns, C. Cicero, J.L. Dunn, B.E. Hernández-Baños, R.A. Jiménez, A.W. Kratter, N.A. Mason, P.C. Rasmussen, J.V. Remsen, Jr., and K. Winker. 2023. Check-list of North American Birds (online). American Ornithological Society. Available at: https://checklist.americanornithology.org/taxa/.

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American Oystercatcher (*Haematopus palliatus*) Ingress to Chesapeake Bay

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Abstract: American Oystercatcher *(Haematopus palliatus*) began relocating to non-coastal and atypical habitats decades ago potentially due to changing environmental factors. Historic literature does not address a route or progression timeline of species ingress to Chesapeake Bay. This study uses 286 Chesapeake Bay occurrence records to approximate the route, timeline of scout exploration, and nesting pioneer ingress, plus updating the species status and range last published in 1979. The records indicate relocating coastal oystercatchers entered through mouth of the Bay shortly after middle of the 20th century with the first scout being found in 1964 at Hampton from where exploration north reached Baltimore 23 years later. Records note the first nesting pioneers in 1976 on a remote island in Pocomoke Sound followed in 1977 by a pair on an uninhabited island in Tar Bay. Pocomoke Sound, Tangier Sound, and Tar Bay archipelagos form a nearly 70 km (43 mi) long contiguous chain of mostly uninhabited islands where pioneer ingress appeared to focus in the latter half of the 1970s and early 1980s before radiating in southwest directions during the 1980–1990s to areas scouted in the 1960s. Ingress pioneer activity remained in the lower half of Chesapeake Bay for several years before appearing north at Poplar Island in 2004.

Keywords: American Oystercatcher, Chesapeake Bay, *Haematopus palliatus*, ingress, occurrence record, timeline

The eastern race of the American Oystercatcher (*Haematopus palliatus*) is a large shorebird historically limited to coastal habitat of eastern North America inclusive of Maine south to Yucatan Peninsula (American Oystercatcher Working Group et al. 2020) where they winter and/or nest primarily on sand bars and dunes, shell rakes, tidal saltmarshes, and wrack lines (Frohling 1965, Lauro and Burger 1989, Shields and Parnell 1990, Brinker 1996, McGowan et al. 2005, Wilke et al. 2005, Traut et al. 2006, Sanders et al. 2008, Brinker 2010, Jodice et al. 2014, American Oystercatcher Working Group et al. 2020). Availability of abundant mollusks and other marine invertebrates is associated with their distribution within this physiographic region (Parnell et al. 1986, Wilke et al. 2005, Thibault et al. 2010, American Oystercatcher Working Group et al. 2020). Oystercatcher surveys in 2003 suggest coastal Maryland/Virginia may have the highest density of wintering and nesting American Oystercatcher on the United States east coast (Wilke et al. 2005, Wilke et al. 2007, American Oystercatcher Working Group et al. 2020).

Studies since the mid-1980s have found them pioneering non-coastal and atypical habitats such as upland or island deposition sites of dried materials from marine dredging operations (Zarudsky 1985, Parnell et al. 1986, Lauro and Burger 1989, Shields and Parnell 1990, Toland 1992), capped landfill islands (Paton et al. 2005), an abandoned offshore barge (McNair 1988), and chipped stone covering flat roofs of large commercial buildings (Douglas et al. 2001). Factors in the relocation and habitat type include development and recreational activity (Toland 1992, McGowan and Simons 2006, Sabine et al. 2008, Virzi 2010), habitat destruction from storms (Wilke et al. 2007), and predation (Wilke et al. 2007, American Oystercatcher Working Group et al. 2020). Loss of habitat and food supply with permanent inundation of beach and shallow water shellfish beds from rising sea level associated with climate change (Erwin et al. 2006, Wilke et al. 2007) may also be contributing factors.

The approximately 320 km (199 mi) long Chesapeake Bay is the largest tidal estuary in North America paralleling 75 km (47 mi) or less (mostly much less) west of the United States mid-Atlantic coast, and offers sand beach, bar and dune habitat, shell rakes, shallow-water shellfish beds, plus abundant undeveloped islands of tidal marsh habitats suitable for American Oystercatcher wintering and/or nesting. Thus, Chesapeake Bay appears to be an area coastal oystercatcher may quickly exploit, but the historical literature provides a single questionable occurrence record in the second half of the 19th century (Rives 1890), none in the first half of the 20th century, and a relatively small number during the second half of the 20th century. Literature referencing their range and status in Chesapeake Bay is absent prior to 1979 (Bailey 1913, Hampe and Kolb 1947, Murray 1952, Stewart and Robbins 1958).

This study of American Oystercatcher uses historical occurrence records to approximate the route and timeline progression of first scouts and subsequent nesting pioneers at Chesapeake Bay locations. Status and range are updated to 2020 based on findings of this study.

METHODS

Figure 1 shows progression of one-half the standard 7.5 USGS 1:24,000 latitude in Chesapeake Bay from coastal Virginia Beach near its mouth north to entrance of the Susquehanna River in Maryland with locations of American Oystercatcher occurrence records referenced in the text.

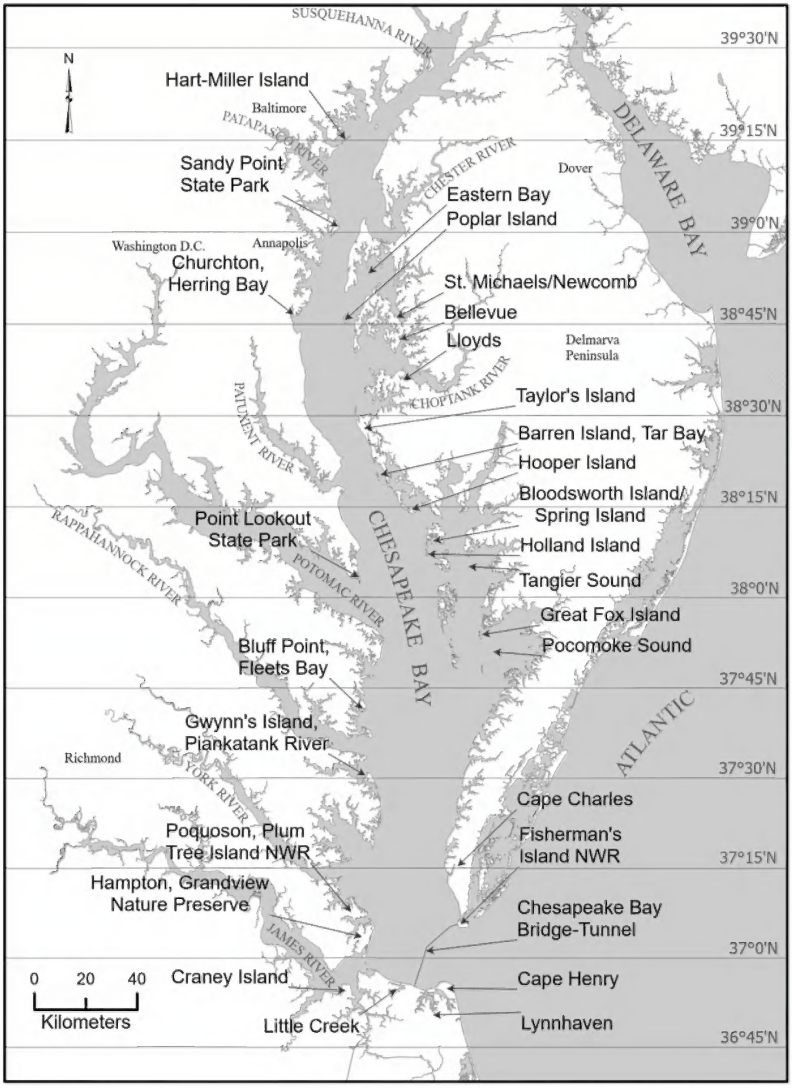

Figure 1. Latitudinal progression of Chesapeake Bay with locations of referenced American Oystercatcher (*Haematopus palliatus*) occurrence records.

American Oystercatcher occurrence records, from tidewater Chesapeake Bay locations, published in periodic journals, reference books, and organizational newsletter articles, plus two unpublished databases provide a dataset of 350 records. The periodic journal *North American Birds* post-2008 Volume 62(1) is not publicly available for research while contemporary e-Bird records are not included. Records obviously outside tidewater Chesapeake Bay, lacking definitive variables (date, location, quantity, observer, etc.), duplicates, or other anomalies totaled 14 deletions reducing the dataset to 336 records. National Audubon Society Christmas Bird Counts referenced as Little Creek on the south side mouth of Chesapeake Bay, and Cape Charles on the north side constitute 48 wintering oystercatcher records in the dataset. Portions of the Atlantic Coast are contained in both these count areas, thus any portion of the tally occurring in Chesapeake Bay cannot be ascertained. Similarly, a record for 1852 at Cape Charles (Rives 1890) suffers from the same uncertainty. Therefore, these records are deleted further reducing the dataset to 287 records. A single 1949 record at the head of Chesapeake Bay tributary Lynnhaven Bay is about 6 km (4 mi) south of the Chesapeake Coast and a like distance west of the Atlantic Coast questioning its location one way or the other, thus it is also deleted from the dataset which now stands at 286 records used in the study. A Microsoft Excel workbook spreadsheet used to document the records enabled filtering and sorting of the data for interpretation and evaluation.

RESULTS

The 286 American Oystercatcher occurrence records range 1964–2021 with 58 percent post-1999; their decadal and monthly distributions are given in Tables 1 and 2.

Table 1. Decadal percentage summary of 286 American Oystercatcher occurrence records in Chesapeake Bay.

Decade	1960s	1970s	1980s	1990s	2000s	2010s	2020s	Totals
Number	3	30	49	37	121	45	1	286
Percentage	1%	10%	17%	13%	42%	16%	<1%	100%

Table 2. Monthly percentage summary of 286 American Oystercatcher occurrence records in Chesapeake Bay.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Number	5	2	26	23	59	82	37	25	12	3	1	11	286
Percentage	2%	<1%	9%	8%	21%	29%	13%	9%	4%	1%	<1%	4%	100%

Scout stage: Historical occurrence records indicate coastal American Oystercatcher entered through the mouth of the Chesapeake Bay with the first scout found in 1964 just 10 km (6 mi) inside the south shoreline before reaching their northern-most exploration just east of Baltimore in 1987. This exploration journey of 256 km (159 mi) took place over a 23-year period with the majority (71%) of the occurrence records in 15 March–1 June.

Pioneering stage: The historical records note the first American Oystercatcher nesting pioneers in 1976–1977 at Pocomoke Sound and Tar Bay islands. These locations are within the contiguous Pocomoke Sound, Tangier Sound, and Tar Bay archipelagos stretching nearly 70 km (43 mi) on the east side the middle-portion of Chesapeake Bay. Pioneering focused in these archipelagos during the late-1970s and 1980s prior to appearances at south and west Bay locations beginning in 1983. The first nesting pioneer north of Tar Bay did not appear until 2004.

Status and range: Occurrence records in this study indicate by 2020 from the mouth of the Chesapeake Bay, American Oystercatcher may be found locally uncommon wintering, transient, and nesting north to Pocomoke Sound (latitude 36°90′N–37°80′N); uncommon to common wintering, transient, and nesting in the archipelagos of Pocomoke Sound, Tangier Sound, and Tar Bay (latitude 37°80′N–38°36′N); and rare wintering, transient, and nesting from there to Baltimore (latitude 38°36′N–39°25′N).

DISCUSSION

The disparate dates and locations of a relatively small number of American Oystercatcher occurrence records in Chesapeake Bay over 50 years, showing no well-defined chronological progression of coastal oystercatcher scout and pioneer ingress into Chesapeake Bay, need consideration of several factors for interpretation:

- Oystercatchers are solitary nesters on natural shoreline habitats (beach, sandbar and dunes, mud flats) but may flock in winter.
- Riprap, piers, docked boats, and human activities of waterfront development along much of the shorelines of the Chesapeake Bay tributary since the 1960s may have compelled oystercatcher pioneers to seek undisturbed shoreline habitat with no public access, or that found at islands offshore. Thus, oystercatcher occurrence in suitable habitat may be largely restricted to observers with boat access.
- Chesapeake Bay boat registrations stood at nearly 700,000 by 2021 (Virginia Department of Wildlife Resources [2020], MarineTitle.com [2021]). Boat activity may therefore discourage oystercatcher shoreline exploration and use particularly in intensively developed areas.

- Most boating activity takes place during May–October, thus there may be few oystercatcher observations during cooler months of the year.
- The approximately 70 km (43 mi) long contiguous archipelagos of Pocomoke Sound, Tangier Sound, and Tar Bay (latitude 37°80′N–38°36′N) offers abundant habitat suitable for oystercatchers use and may have been important early in their Bay expansion. However, prior to the 1970s, wildlife diversity in these archipelagos had not been studied.
- The Delmarva Peninsula comprises most of the Chesapeake Bay, Coastal Plain habitat yet no bridge access existed before 1952 in the north portion and 1964 in the south portion making access inconvenient for regional population centers on the western side of Chesapeake Bay (e.g., Hampton/Norfolk, Richmond, District of Columbia, and Annapolis/Baltimore) prior to those dates. This situation may have influenced the number of oystercatcher occurrence records prior to and/or since bridge openings.

A preliminary review of occurrence records suggests coastal American Oystercatcher ingress to Chesapeake Bay may have taken four possible routes, e.g.:

1) Expanding northwest through the mouth of the Bay then progressing north,
2) Going west across the narrowest point (<40 km (<25 mi) wide about 85 km (53 mi) north of the Bay mouth) of the Delmarva Peninsula leading directly to abundant suitable habitat in the Bay archipelagos,
3) Possibility 2 followed by pioneer establishment within the archipelagos followed by radiation, north, south, and west in the Bay to pioneer other Bay locations, or,
4) A combination of any of the previous possibilities.

The four ingress route possibilities are considered in the following scout and pioneer evaluations.

Scout stage: Evaluation of initial American Oystercatcher scouts in Chesapeake Bay progresses chronologically from date, location, and latitude of the first occurrence record to the next earliest record, and so on to the northern-most location in the Bay. The first occurrence record of an oystercatcher scout in Chesapeake Bay appears on 15 March 1964 (Murray 1964) with a single at Hampton, Grandview Nature Preserve (latitude 37°04′N) approximately 10 km (6 mi) west of the Bay mouth (a youthful Donald Messersmith is one of the three observers credited with this record). Subsequent chronological scout records of singles on 21 April 1966 (Robbins 1966) at Churchton, Herring Bay, and 25 December 1969 (Robbins 1970) at St. Michaels, Eastern Bay are both approximately 195 km (121 mi) north (latitude 38°45′N) of Hampton. Sighting of a single oystercatcher scout on 13–18 March 1977 (Robbins 1977, Scott 1977) at Sandy Point State Park, north of Annapolis indicates scouts had explored approximately 226 km (140 mi) north (latitude 39°00′N) of Hampton by 1977. A total of seven years expired before the northern-most occurrence

record of a single scout on 31 May 1987 (Armistead 1987, Ringler 1987) at Hart-Miller Island just east of Baltimore (latitude 39°25′N). Single oystercatcher scouts found at additional locations of lower latitude in the ensuing 1980s and 1990s on 26 May 1982 (Ringler 1982a) at Newcomb, Eastern Bay; 21 June 1990 (Ringler 1990) at Lloyds, Choptank River; 30 March 1991 (Ringler 1991) at Taylors Island, Chesapeake Bay; and 21 September 1991 (Armistead 1992, Southworth and Southworth 1992) at Bellevue, Choptank River suggest continuous exploration of Chesapeake Bay tributaries. The majority (71%) of these oystercatcher scout records took place during 15 March–1 June period that fits well with the 1 March–27 July "pre-breeding migratory season" and "breeding season" given by the American Oystercatcher Working Group et al. (2020) and may be the time of the year oystercatchers are most active. These records support ingress route Possibility 1.

Pioneer stage: American Oystercatcher nesting signifies establishment of pioneer ingress in Chesapeake Bay, thus is evaluated same as initial scouts above, i.e., chronologically from date of first pioneer to next earliest pioneer and so on. The first oystercatcher pioneer occurrence record is on 8 August 1976 (Scott 1976) at Great Fox Island, Pocomoke Sound (latitude 37°90′N) when observer Reed Huppman notes "all nests failed." Despite some misgiving with the previous record, a nest with one egg on 4 June 1977 (Armistead 1977) at Barren Island, Tar Bay (latitude 38°34′N) is conformational as are two nests found on 4 June 1978 (Ringler 1978, Scott 1978) at Hooper Island, Chesapeake Bay (latitude 38°24′N). Subsequent to these first pioneering oystercatchers, others are confirmed in 1981–1989 at numerous locations ranging Grandview Nature Preserve, Hampton and nearby Plum Tree Island National Wildlife Refuge, Poquoson (Armistead 1984, Kain 1987); north to Gwynn's Island, Piankatank River mouth (Armistead 1984); Bluff Point, Fleets Bay (Russell 1986, Kain 1987, Rottenborn and Brinkley 2007); some islands in Tangier Sound (Bloodsworth, Holland, and Spring Islands) (Armistead 1981, Ringler 1981, 1982b, 1983, 1989); and finally Barren Island, Tar Bay (Armistead 1981, Ringler 1980, 1981, 1982b, 1983, 1989). The occurrence records provide no new pioneer locations in the 1990s; however, cited on 1 May 2004 (Day 2004) is a nest with three eggs on the artificial Island Three of the Chesapeake Bay Bridge-Tunnel traversing the mouth of the Bay. The first pioneer north of Barren Island, Tar Bay is noted about the same time, 11 May 2004 (pers. obs. et al.), at Poplar Island, Chesapeake Bay (latitude 38°45′N).

Chronological progression of American Oystercatcher nesting pioneer occurrence records, signaling population ingress in Chesapeake Bay, is largely focused in 1970–1989 within the many uninhabited and terrestrial-predator-free islands in Pocomoke Sound, Tangier Sound, and Tar Bay. These archipelagos form a nearly 70 km (43 mi) long chain of previously unexplored habitats while such a focus of habitat suitable for oystercatcher occupation is found in no other

portion of Chesapeake Bay. These factors suggest oystercatchers may have established pioneer pairs in these isles subsequent to passing of scouts in the mid-1960s but nesting went undetected until field exploration of the islands began in the 1970s (Armistead 1972, 1974, 1976, 1977, 1978). Establishment of nesting pioneers in the archipelagos may have taken several years during the 1970s before progeny began radiating during the 1980s to ingress other Chesapeake Bay locations. Occurrence records from seven island locations denote a 2–10 years lapse between the first scout and first pioneer. Records of first pioneers may support any of the four hypotheses, however the American Oystercatcher Working Group et al. (2020) note under Timing and Routes of Migration "…individuals apparently do not over fly land…" which may preclude ingress route Possibilities 2, 3, and 4. Further doubt to scouting and pioneering over the Delmarva Peninsula to the Bay archipelagos is provided by the fact all nesting pioneer ingress in the 1980s took place in the lower Bay previously explored by scouts. Therefore, progression of American Oystercatcher nesting pioneers may be best represented by ingress route Possibility 1.

Status and range: American Oystercatcher status and range in Chesapeake Bay are first addressed by Larner et al. (1979) as "…locally common in Tangier area of Chesapeake Bay: uncommon to rare transient and winter visitor elsewhere in lower Chesapeake Bay…". This identical description is repeated in Kain (1987) and Rottenborn and Brinkley (2007). These publications consider only the Virginia portion of the Bay while publication of these parameters for the Maryland and Delaware portions are totally lacking (Hampe and Kolb 1947, Stewart and Robbins 1958, Hess et al. 2000). The status/range description in these publications reflects the 1970s amalgamation of scout exploration and establishment of nesting pioneers in the Pocomoke Sound archipelago. Oystercatcher nesting surveys carried out in Chesapeake Bay during April–July 2003 found 120 pairs scattered mostly within the Tangier Sound archipelago, while 39 of them had nests in the Maryland portion (Traut et al. 2006, Wilke et al. 2007) signaling a need for updating the species status and range in the Bay.

Summarizing, coastal American Oystercatcher occurrence records revealing the most plausible route of ingress for scout exploration and nesting pioneer into Chesapeake Bay is west through the mouth of the Bay, then north to the furthest reach. The first scout occurrence record is 15 March 1964 at Hampton, Grandview Nature Preserve, 10 km (6 mi) west of the Bay mouth. Scout exploration of 256 km (159 mi) over the following 23 years reached its northern-most extension near Baltimore on 31 May 1987. Oystercatcher nesting pioneer ingress is first noted on 8 August 1976 at Great Fox Island in Pocomoke Sound. Pioneer ingress the next several years focused within archipelagos in Pocomoke Sound, Tangier Sound, and Tar Bay in the central portion of the Bay before expanding south in the 1980s to areas previously explored by scouts in

the 1960s. Northward pioneering ingress appeared early as 4 June 1977 at Barren Island, Tar Bay but not further north until 27 years later on 11 May 2004 at Poplar Island, Chesapeake Bay despite scouts passing this latitude 35–38 years prior. Factors contributing to these disparities may be the attractiveness of the abundant oystercatcher habitat contained in the Pocomoke Sound, Tangier Sound, and Tar Bay archipelagos (not found in any other portion of Chesapeake Bay), and occurrence records that show lapses of 2–10 years between date of the first exploration scout and first nesting pioneer at specific locations. Oystercatcher occurrence records used in this study and 2003 nesting surveys highlight the need to update the 1979 species status and range in Chesapeake Bay.

ADDENDUM

Numerous studies in the literature and occurrence records in this study found American Oystercatchers utilizing artificial islands characterized by an earthen perimeter dike lined on the exterior with riprap shielding and the interior filled with dried materials from marine dredging operations. These largely undisturbed habitats may be void of vegetation or nearby sustainable food supply yet oystercatchers find them attractive for relocation where some may nest successfully. The role of these islands in oystercatcher adaptability to non-coastal and atypical habitats, and future increase of ingress and nest success in Chesapeake Bay is intriguing.

ACKNOWLEDGMENTS

Henry T. (Harry) Armistead is hereby credited with a substantial portion of the data used in this study taken from publications relating results of his 1970–1980s field explorations in the Tar Bay, and Tangier Sound archipelagos; long-time editorship of *American Birds*, Middle Atlantic Coast Region; and observed bird species reports supplied editors of *Maryland Birdlife* and *American Birds* for over 50 years. Examples of the latter can be found in most of the Armistead, Ringler, Robbins, Scott, and Southworth and Southworth editor references cited in this paper. Mark Cahoon expertly composed Figure 1. I thank the *Maryland Birdlife* editorial staff and three anonymous reviewers for comments on an earlier draft.

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An Orange-Crowned Warbler (*Leiothlypis celata*) with a Deficit in Carotenoid Deposition

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On 24 September 2022 one of the authors (CGH) found and photographed a pale, brownish-gray warbler (family Parulidae) in a mixed flock at Assateague State Park in Worcester County, Maryland, USA (Harris 2022). The bird in question resembled a fall "Western" Palm Warbler (*Setophaga palmarum palmarum*) in overall color but lacked the yellow undertail coverts of that species. A review of the photos (Figure 1) subsequently indicated that the bird was an Orange-crowned Warbler (*Leiothlypis celata*, OCWA) completely lacking any yellow or green tones. The spiky bill identifies the bird as one of the species in the genus *Leiothlypis* and eliminates all other species of wood warblers (family Parulidae). The prominent but split eye ring, and the short and relatively faint line through the eye, are features that only the OCWA possesses. Of the other two species in this genus expected in Maryland, Nashville Warbler (*L. ruficapilla*) has a solid white eye-ring and no line through the eye, and Tennessee Warbler (*L. peregrina*) has a longer and stronger eyeline, not very prominent eye crescents and a spikier bill. Western species in this genus also have a different face pattern compared to this bird, with all three (Virginia's [*L. virginiae*], Colima [*L. crissalis*], and Lucy's [*L. luciae*] Warblers) having prominent eye rings that are not split as in this bird (for further details, see Curson et al. 1994 and Dunn and Garrett 1997). No species in this genus would be this plain in the absence of a pigment deficiency. We also considered a hybrid of OCWA with other species, but these would also be expected to show prominent yellow and/or green tones.

This identification of this bird as an OCWA without any of the typically yellow or yellow-green coloration indicates that this bird almost undoubtably lacked proper carotenoid deposition. Although the OCWA has not been studied for carotenoid accumulation, carotenoids (lutein) are deposited in other birds of the same genus, *Leiothlypis*; specifically, Nashville Warbler and Virginia's Warbler (McGraw 2006). This bird did, however, have gray on the crown and cheeks similar to normal first year OCWA (Figure 1) indicating no deficit in melanin metabolism and deposition (van Grouw 2019). The loss of the carotenoid

coloration also reveals the underlying melanin deposition over much of the dorsal surfaces of the bird.

Figure 1. The pale, brownish-gray Orange-Crowned Warbler (*Leiothlypis celata*) is shown in the left panel (photograph by CGH) and a normal OCWA is shown in the right panel (photograph by WSY). Note the absence of yellow pigmentation in the pale bird with apparent melanin retention exemplified by subtle tannish color in the alula and primary coverts and darker gray-to-black color more dorsally. The purely yellow undertail coverts are white in the pale OCWA – even very dull OCWA will have a yellow wash in this area. Furthermore, the yellow-green edges to the primaries and tail feathers are white in the pale bird as opposed to being bright yellowish-green.

There are several points in the pathway(s) from ingestion to deposition of metabolized product that could lead to the particular coloration of this bird. It is highly unlikely that it suffered from a dietary deficiency as the bird was seen in the wild without signs of malnutrition such as frayed feathers or weight loss. Furthermore, OCWA are known to eat chiefly invertebrates, but also some berries, fruits, suet, sap, etc. (Gilbert et al. 2020), that were all present in September in Maryland. The carotenoids responsible for yellow color, principally lutein and zeaxanthin, are available from plants. Upon ingestion, the carotenoids are absorbed from the intestines and are transported to the liver where they may be metabolized. As carotenoids are lipophilic, passive absorption though the small intestines is thought to only play a minor role and that active transport via lipid transport is responsible for the majority of absorption (McGraw 2006). Also, which yellow pigments are deposited in the developing feathers may be the result of local selection of specific pigments within their follicles (McGraw et al. 2003). Carotenoids may also be metabolized in the integument, including feathers, to produce red coloration (Mundy et al. 2016, Toomey et al. 2022). The relative advantages of carotenoid metabolism (with regard to red coloration) in the liver versus the integument is discussed by Alonso-Alvarez et al. (2022). And various proteins and structures

with which the pigments are associated within the feather also contribute to the final coloration. (Prum 1999). High concentrations of lutein can give an orange-red color. Recent studies have even found avian metabolism-derived carotenoids yielding purple colors (reviewed in LaFountain et al. 2015).

Thus, the absence of yellow in this pale OCWA could be due to a variety of causes. However, given that the carotenoid lutein needs no metabolism to yield a yellow color, perhaps this narrows the potential deficit to either absorption at the intestines or deposition within the feather itself. Mutation in the scavenger receptor class B type I (SCARB1), a protein that allows cellular uptake of cholesterol, vitamin E, and carotenoids, is responsible for a type of white canary (Toomey et al. 2017). Another potential cause for the loss of yellow color may be the generalized over-expression of a carotenoid metabolizing enzyme such as carotenoid-9',10'-cleaving dioxygenase. This enzyme has been associated with reduced carotenoid yellow pigmentation in lizards (Andrade et al. 2019) and suggested for warblers (Baiz et al., 2021).

We were not able to find information about the pigments in the normal OCWA, although other Parulidae species with yellow use unmetabolized lutein directly (Weaver et al. 2018). Without samples from this and normal OCWAs, it is probably impossible to be more precise about the cause of this aberrant coloration. As carotenoids are important for normal vision and immune function, if this bird were to be refound over subsequent years, the deficit might be more likely the result of improper feather deposition, as opposed to, for example, intestinal malabsorption, that would lead to poor fitness.

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2022 Fall Flyway Report – Harford County, Maryland

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INTRODUCTION

There are two regularly operating migratory bird banding stations in Harford County, Maryland. Both stations operate in the spring and fall months and use mist nets to carefully capture, mark, and recapture passerines to monitor the health, diversity, and contribute to the education of others interested in learning more about avian biology. Data collected from these efforts are used to assist scientists in making regular observations during migration in the mid-Atlantic region and information is provided consistent with those previously reported elsewhere (e.g., North American Bird Bander [NABB]).

Here we provide the results from activities conducted in the fall of 2022 at Harford Glen in Harford County, Maryland. Banding activities in the fall of 2022 at Eden Mill did not occur due to lack of availability of personnel.

Banding Station Description

The Harford Glen Banding Station (39°29.17′N, 76°20.37′W) is a closed area operated by the Harford County Public Schools system. The nets are dispersed in the transitional forest where Plum Tree Run reaches Atkisson Reservoir (see Johnson and Subolefsky [2021] for more details concerning location).

Banding operations began in late September and were completed by early December 2022.

OBSERVATIONS

The fall 2022 banding season at Harford Glen was generally consistent with previous results. Number of species and productivity (measured by number of captures per net/hour) were essentially unchanged (Table 1); however, a higher percentage tended to be hatching year (HY) birds in 2021, suggesting more favorable conditions for reproductive success. Additional dates were added at

the end of the season to increase the number of Dark-eyed Juncos (SCJUs). Previously, SCJUs from mid-October to mid-November resulted in fewer than five. Adding dates until 8 December allowed observations to increase where SCJUs became the second most common species captured (Table 2). Extending banding dates later in the year also increased occurrence of Fox Sparrows (N=4) and tended to lower HY percentages as they were skewed towards birds of unknown age where hatching year physiological indicators were less frequently observed.

Some other species were notably increased in 2021 to include Ruby-crowned Kinglets and Eastern Bluebirds; both are considered eruptive in their behavior (or absence thereof) around netting locations.

Eight warbler, three woodpecker, and three species of *Catharus* thrushes were captured. Some individuals that are not regularly encountered included Cedar Waxwing, Connecticut Warbler, Northern Waterthrush, Gray-cheeked Thrush, and a Sharped-shinned Hawk (Figure 1). As in 2020, the most common warbler species captured was Magnolia (N=5).

Table 1. Productivity summary data, Harford Glen, fall 2022.

First day	20 September
Last day	8 December
Days open	17
Nets used	15.5
Net hours	962
Best day	55
Best day date	22 November
Most species	15
Most species date	22 November
Banded 2021	287
Banded 2022	330
Species 2021	38
Species 2022	43
Birds/100 net hours 2021	46
Birds/100 net hours 2022	47
% Hatching year 2021	74%
% Hatching year 2022	40%

Table 2. Ten most commonly banded species, Harford Glen, fall 2022 and 2021. The first column (No.) for each year provides the number of individuals of each species banded and the final column (% HY) provides the percentage determined to be hatching year birds. The 2021 banding data are from Johnson and Subolefsky (2022).

2022			2021		
No.	**Species**	**%HY**	**No.**	**Species**	**%HY**
72	White-throated Sparrow	32	52	Gray Catbird	90
49	Dark-eyed Junco	6	47	Northern Cardinal	47
42	Northern Cardinal	31	35	White-throated Sparrow	57
24	Gray Catbird	96	21	Song Sparrow	81
20	Northern Cardinal	31	14	Blue Jay	36
16	Song Sparrow	19	10	Black-throated Blue Warbler	50
15	Ruby-crowned Kinglet	13	10	Common Grackle	100
14	Carolina Wren	64	9	Eastern Towhee	100
14	Eastern Bluebird	0	8	Tufted Titmouse	100
8	Swamp Sparrow	100	7	Carolina Wren	100

Figure 1. Sharp-shinned Hawk. Hatching year male; Harford Glen, Harford County, Maryland, 17 November 2022. (photographed by Joe Subolefsky)

DISCUSSION

Harford Glen continues to be an island of habitat surrounding by an ever-increasing sprawl of suburban development. It offers aquatic and forest ecotones that are attractive to migratory passerines which make any changes in the relative capture rates of individuals difficult to interpret (i.e., are they actual changes in migratory populations or is the relative migratory stopover value of this habitat increasing?).

Typically, results for highest species diversity and highest capture rates are not the same day. Diversity is typically higher in early fall when migratory passerines are at their peak and higher capture rates increase when winter residents arrive (e.g., sparrows and finches). These results show results of highest species and numbers of individuals were the same day (22 November). Caution is recommended in weighing the importance of any explanation; however, a mix of poor weather dates in the spring combined with an above average day in November provided an exception to our typical trend.

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Maryland Christmas Bird Counts (123nd CBC) December 2022 through January 2023

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Twenty-five counts took place in Maryland this year (Table 1). This season's average low temperature was 34.8 °F (1.6 °C) and the average high was 48.9 °F (9.4 °C). The season's lowest temperature was 16 °F (-8.9 °C) at Southern Dorchester County (minimum low temperature for all counts) and the highest temperature was 68 °F (20 °C) during the Bowie count (maximum high). Chesterville had 47 °F (8.3 °C) for a low temperature (maximum low temperature over all counts) and Oakland had the lowest high temperature of 28 °F (-2.2 °C) (minimum high temperature). Highest winds were 26 mph (42 km/h) east winds on the Jug Bay count. Oakland was the only count with snow on the ground (1–2 in [2.5–5.0 cm]) and the only with any precipitating snow (light) during the count day. Only Southern Dorchester County reported partly frozen moving water and fully frozen open water, though nine counts had partly frozen still water.

Table 1. 2022–2023 Maryland Christmas Bird Counts: count names, survey dates, and compilers (primary compilers listed first).

Christmas Bird Count	Count Date	Compiler
Allegany County	17 DEC 2022	Mark Eanes
Catoctin Mountain	17 DEC 2022	Kathy Brown
Denton	17 DEC 2022	Steve Westre
Oakland	17 DEC 2022	Connie Skipper
Triadelphia Reservoir	17 DEC 2022	David W. Holmes
Washington County	17 DEC 2022	Mark Abdy
Elkton	18 DEC 2022	Russell Kovach
Jug Bay	18 DEC 2022	Marcia Watson
Lower Kent County	18 DEC 2022	Nancy Martin, Walter Ellison
Middle River	18 DEC 2022	Libby Errickson
Point Lookout	18 DEC 2022	Bob Boxwell
Port Tobacco	18 DEC 2022	Gwen Brewer
Salisbury	18 DEC 2022	Mike Walsh
Seneca	18 DEC 2022	Jim Nelson
St. Michaels	18 DEC 2022	Wayne Bell
Southern Dorchester County	26 DEC 2022	Bruce Peterjohn
Crisfield	27 DEC 2022	Paul Bystrak
Ocean City	28 DEC 2022	Mark Hoffman

Christmas Bird Count	Count Date	Compiler
Patuxent River	31 DEC 2022	Ben Springer
Rock Run	31 DEC 2022	Mark Johnson
Annapolis-Gibson Island	01 JAN 2023	Hal Wierenga, Lynn Davidson, Sue Ricciardi
Chesterville	01 JAN 2023	Maren Gimpel
Loch Raven	01 JAN 2023	Libby Errickson
Bowie	02 JAN 2023	David Mozurkewich
Sugarloaf Mountain	02 JAN 2023	Janet Millenson

Table 2 summarizes the the numbers of field counters, parties, party hours and miles, feeder counters and hours, and night hours and miles.

Table 2. 2022–2023 Maryland Christmas Bird Counts: summary.

Christmas Bird Count	Count Date	Field Counters	Maximum Parties	Party Hours	Party Miles	Feeder Counters	Feeder Hours	Night Hours	Night Miles
Allegany County	17 DEC 2022	16	9	35	110.89	1	0.75		
Catoctin Mountain	17 DEC 2022	18	13	68.6	325.05			0.75	0.1
Denton	17 DEC 2022	14	14	67.04	249.09	1	2	11	70.5
Oakland	17 DEC 2022	25	13	103.5	436.05	2	1.25	2.5	10
Triadelphia Reservoir	17 DEC 2022	83	43	210.57	512.21	3	3	5	4.5
Washington County	17 DEC 2022	24	12	63.25	328.75	4	3	0.25	
Elkton	18 DEC 2022	12	8	42.8	179.7	1		1.6	8.9
Jug Bay	18 DEC 2022	46	32	149.2	409.5			4.3	18.7
Lower Kent County	18 DEC 2022	20	13	104.8	343.3			9.5	48
Middle River	18 DEC 2022	31	26	76.01	130.89				
Point Lookout	18 DEC 2022	17	17	90.7	276.1		0	11.4	21
Port Tobacco	18 DEC 2022	19	9	63.25	249.75			2.5	6.5
Salisbury	18 DEC 2022	26	13	100.5	455.9	1	10	7.5	
Seneca	18 DEC 2022	171	68	261.73	460.3	20	42.5	6.25	39
St. Michaels	18 DEC 2022	49	16	112.7	397.4	6	8	10.5	
Southern Dorchester County	26 DEC 2022	10	9	77.25	276.75			7.75	10
Crisfield	27 DEC 2022	29	14	88.29	199.54		0	8.2	10.3
Ocean City	28 DEC 2022	55	26	225.6	544.4			6.85	21.1
Patuxent River	31 DEC 2022	30	16	64.65	215.6	11	9.6	2.4	4.5
Rock Run	31 DEC 2022	41	14	64.3	237.5		25	4	
Annapolis-Gibson Island	01 JAN 2023	66	47	241.4	488	8	34	9	31
Chesterville	01 JAN 2023	20	9	88.5	238			10.5	71.25
Loch Raven	01 JAN 2023	44	23	68.14	85.52	5	12		
Bowie	02 JAN 2023	77	42	258.65	504.35	2	19.5	13	22.3
Sugarloaf Mountain	02 JAN 2023	67	36	165.5	410	2	2.5	3.5	4.25

Major highlights of the Maryland Christmas Bird Counts (Tables 3 and 4) were an Ash-throated Flycatcher (Catoctin Mountain), a Harris's Sparrow (Chesterville), and a Lazuli Bunting (Ocean City). Additionally, some of the more interesting sparrows were Clay-colored and Lincoln's (both Bowie). There were some unusual wintering warblers including Tennessee (Middle River), Nashville (Triadelphia Reservoir), Northern Parula (Washington County), and Wilson's Warbler (Seneca).

I use "hc" and "lc" codes in this report to identify "all-time" highs and lows rather than the compilers' or author's/editor's ideas of what constitutes a high or low count but will also reference those as "near high" or "good number" or "lower than typical" (as examples). The "us" code (unusual species) is used only in the written section of the report and is used based on the judgement of the compilers and/or the author and editor.

Geese, Swans: Allegany had a Snow Goose (us). Chesterville (1) and Rock Run (cw) were the only counts to encounter Greater White-fronted Geese. Fourteen Maryland counts had Cackling Geese. Jug Bay had 11 Cackling Geese, and Southern Dorchester County had 5 (both hc). Bowie had 5 (hc), Middle River had 4 (hc), and Annapolis-Gibson Island had 2 Trumpeter Swans (us; hc). Crisfield had 1,679 Tundra Swans (hc).

Puddle Ducks: St. Michaels had 14 Wood Ducks (hc) A single Wood Duck at Jug Bay was considered low (but it has been missed). Bowie and Middle River each had a Blue-winged Teal; Ocean City had one for count week. St. Michaels had 23 Northern Shovelers (hc). Loch Raven had 98, and Washington County had 26 Gadwall (both hc). Loch Raven had 209 Mallards (hc). Loch Raven had 77 American Black Ducks (hc); on Southern Dorchester County, 166 was close to the all-time low count of 160 (over 76 counts); at Rock Run, 2 was a low count (lc; lowest in all 59 counts). Allegany County had 2 Northern Pintails (hc; seventh occurrence). Loch Raven had 53 Green-winged Teal (hc).

Diving Ducks: Loch Raven had 238 Redheads (hc). At Middle River 2,628 Greater Scaup was a high and for Loch Raven 4 Greater Scaup was a high (both hc). Jug Bay only had Greater Scaup for count week (it has been missed before in the count's long history). Middle River had 944 Lesser Scaup (hc). Middle River had a White-winged Scoter (second occurrence). St. Michaels had 26 Common Goldeneye (lc over all 67 counts). Point Lookout had a Barrow's Goldeneye for count week. Middle River had 613, Oakland had 523, Loch Raven had 288, and Denton had 27 Hooded Mergansers (all hc). Loch Raven had 752, and Oakland had 193 Common Mergansers (both hc). Middle River had 28 Red-breasted Mergansers (hc). Elkton had 1,105 Ruddy Ducks (hc).

Turkeys, Grebes, Doves, Hummingbirds: Jug Bay had only 1 Wild Turkey (considered low but has been missed). Sugarloaf Mountain had a Red-necked Grebe for count week. Loch Raven had only 82 (lc) Rock Pigeons and 88 (lc) Mourning Doves. Ocean City had a Ruby-throated Hummingbird (us).

Rails, Cranes: Jug Bay had 2 Clapper Rails. Middle River had 319 American Coots (hc) while 77 at Loch Raven was considered low (has been missed). Middle River had 68 Sandhill Cranes (hc) while Seneca had them for count week.

Shorebirds: Jug Bay had a Semipalmated Plover for count week (us). Two Killdeer at Oakland was a count high (hc). Jug Bay had 12 Purple Sandpipers (hc). Jug Bay had a Least Sandpiper for count week (us). Four American Woodcock at Seneca was an unusual species. Point Lookout had 73, and Southern Dorchester County had 50 Wilson's Snipe (both hc). At Jug Bay, a single Wilson's Snipe was low (has been missed). Point Lookout had a Spotted Sandpiper (us).

Gulls: Middle River had 4,433 Ring-billed Gulls (hc). Denton had 1,801 Herring Gulls (hc). Middle River had an Iceland Gull (third occurrence over the span of their eight counts). Point Lookout had a Lesser Black-backed Gull (us; first occurrence). Ocean City had a Royal Tern (us).

Gannets, Cormorants: Jug Bay had a Northern Gannet for count week. Ocean City had 291 Double-crested Cormorants (hc) and Seneca had 42 (hc).

Herons: Crisfield had 168 Great Blue Herons (hc).

Vultures: Sugarloaf Mountain had 305, and Oakland had 5 Black Vultures (all hc). Allegany County had 26, and Oakland had 7 Turkey Vultures (both hc).

Hawks, Eagles: Sugarloaf Mountain had 2 Osprey (second occurrence and hc). Allegany County had a Golden Eagle (us; third occurrence) as did Annapolis-Gibson Island (us). Middle River had 8 Northern Harriers (hc). A single Sharp-shinned Hawk was low for Washington County. Catoctin Mountain had 11, and Oakland had 8 Cooper's Hawks (all hc). Lower Kent County had 202, Middle River had 101, Annapolis-Gibson Island had 72, Point Lookout had 45, and Oakland had 16 Bald Eagles (all hc). Loch Raven had 20 Bald Eagles which was a lc in their short 5-year history. Sugarloaf Mountain had 95, Jug Bay had 44, Crisfield had 29, and Ocean City had 24, Salisbury had 21, and Point Lookout had 16 Red-shouldered Hawks (all hc). Oakland had 31 and Middle River had 28 Red-tailed Hawks (both hc). Sugarloaf Mountain had 34 Red-tailed Hawks (lc).

Owls, Kingfishers: Southern Dorchester County had 29 Eastern Screech Owls (close to the hc of 33 in count 119). Jug Bay had only a single Eastern Screech owl (the species has been missed). Point Lookout had 5 Barred Owls (hc). Southern Dorchester County had a Long-eared Owl (us). Bowie had 41 Belted Kingfishers (hc).

Woodpeckers: Point Lookout had 26 Yellow-bellied Sapsuckers (hc). Loch Raven had 11 Yellow-bellied Sapsuckers (lc). Oakland had 3 Red-headed Woodpeckers (hc). Oakland had 56 Red-bellied Woodpeckers (hc). At Loch Raven 68 Red-bellied Woodpeckers were a low (lc). Loch Raven had a low of 73 Downy Woodpeckers (lc). Sugarloaf Mountain had 54 Hairy Woodpeckers (hc). Loch Raven had 16 Hairy Woodpeckers for a low (lc). Ocean City had 52 Pileated Woodpeckers (hc) and Chesterville had 33 (hc). Oakland had a high of 4 Northern Flickers (hc).

Falcons: Lower Kent County had 3 Merlins (hc). Jug Bay had a Merlin (us) and also a Peregrine Falcon (us). Eleven counts had Peregrine Falcons, and at Patuxent River, 3 was a high (hc).

Flycatchers, Vireos: Sugarloaf Mountain had 10 Eastern Phoebes (hc). Catoctin Mountain had an Ash-throated Flycatcher (us). Annapolis-Gibson Island (third occurrence) and Port Tobacco (second occurrence) each had a Blue-headed Vireo (us).

Corvids: Oakland had 216 Blue Jays (hc). Loch Raven's 76 Blue Jays was low (lc). Ocean City had 999 American Crows (hc). Patuxent River had 23 Fish Crows (hc). At Loch Raven, 408 was a low count (lc). Oakland had 43, Triadelphia Reservoir had 41, Washington County had 16, Bowie and Sugarloaf Mountain each had 15, Loch Raven had 7 Common Ravens (all hc). At Elkton and Port Tobacco (third occurrence), Common Ravens are still a bit unusual and 2 was a high for each (us; hc). Counts reporting Common Ravens reached a new high of 14 CBCs reporting. I looked at 50 years of data for this range expansion (Figure 1). For the first several years of this time frame, only three or four counts ever showed the species (no more than five until count 106 [2005/2006]). The counts that report Common Ravens changes from year to year so none of the counts reporting them this year can consider it a new species despite 14 being more than ever before.

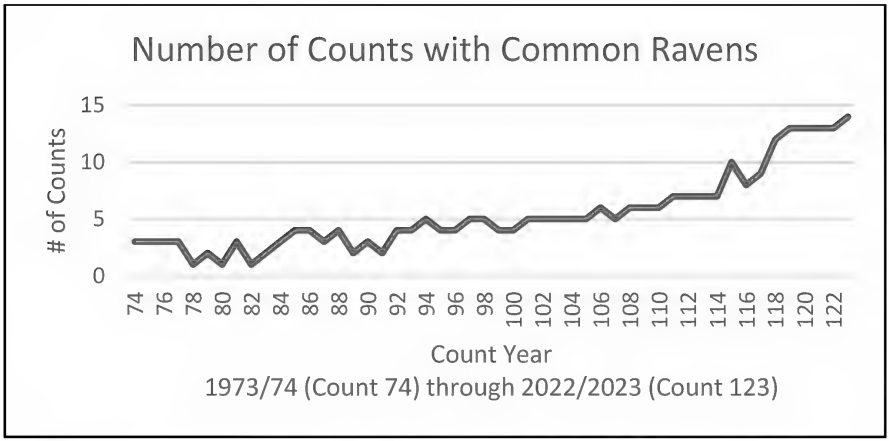

Figure 1. Number of counts reporting Common Ravens in Maryland across 50 years.

Titmice, Larks, Swallows, Kinglets, Waxwings: Crisfield had 122 (hc) Tufted Titmice. Sugarloaf Mountain had a single Horned Lark (lc). Middle River had 3 Northern Rough-winged Swallows (us; second occurrence). Middle River also had 62 Ruby-crowned Kinglets (hc). Loch Raven had 3 Cedar Waxwings (lc). Port Tobacco had a low of 14 Cedar Waxwings (lc).

Nuthatches, Wrens: Bowie had 96 Red-breasted Nuthatches which was a high number for the count (their all-time high was 276 in count 81). Patuxent River had 57, and Jug Bay had 54 Red-breasted Nuthatches (all hc). Bowie had 286, St. Michaels had 124, Denton had 42, and Crisfield had 15 White-breasted Nuthatches (all hc). Southern Dorchester County had 25 White-breasted Nuthatches which is high for that count (record high is 79). Oakland had 4 Winter Wrens (hc). Sugarloaf Mountain had 517, Crisfield had 314 Carolina Wrens (hc).

Mimids, Starlings, Thrushes: Middle River had 49, and Loch Raven had 6 Gray Catbirds (both hc). Elkton had 6 Brown Thrashers (hc). Annapolis-Gibson Island had 1,236 European Starlings (considered low but it has been missed). Seneca had 988 Eastern Bluebirds, and Middle River had 85 (both hc). Seneca had 65 Hermit Thrushes (not all-time hc). Loch Raven had a low count of 2 Hermit Thrushes (lc). Rock Run had a Wood Thrush (us; first occurrence). Loch Raven had a low of 133 American Robins (lc).

House Sparrow, Pipits, Finches: Rock Run had 82 House Sparrows (lc). Loch Raven had 20 Purple Finches (hc). Ocean City had 2 and Allegany County had a single Red Crossbill (us). Chesterville had 3 (hc) and Elkton had a single (second occurrence) Lapland Longspur.

Sparrows: Triadelphia Reservoir had a Grasshopper Sparrow (us). Chesterville had 81 Chipping Sparrows (hc). Bowie had a Clay-colored Sparrow (us) which was new for the count (first occurrence). Loch Raven had 59, and Oakland had 5 Field Sparrows (both hc). Annapolis-Gibson Island had 16 Field Sparrows (considered low; has been missed), Washington County also only had 1 Field Sparrow (but the count has missed the species occasionally). Allegany County had 14, Denton had 13, and Patuxent River had 12 Fox Sparrows (all hc). Oakland had a high of 546 Dark-eyed Juncos (hc). Lower Kent County missed White-crowned Sparrow on count day for the first time (lc). Chesterville had a Harris's Sparrow (us; first occurrence). Washington County had 1,927 White-throated Sparrows (hc). Loch Raven had 1,103 White-throated Sparrows (lc). Chesterville had a Vesper Sparrow (us; first occurrence). Crisfield had 178 Savannah Sparrows (hc). Middle River had 20 Savannah Sparrows (hc). Middle River had 501 (hc) and Loch Raven had 301 (lc) Song Sparrows. Bowie had a Lincoln's Sparrow (us). Allegany County had 16 Swamp Sparrows (hc). Oakland had an Eastern Towhee (us) and Seneca had 96 (near the high of 98 on count 120).

Blackbirds: Seneca had only one Rusty Blackbird which has been missed but is on the low side. Loch Raven had a low of 3 Common Grackles (lc).

Warblers: Middle River had a Tennessee Warbler (us). Six Maryland counts had Orange-crowned Warblers including 6 on Ocean City and 2 at Point Lookout. Other counts having one were Crisfield, Lower Kent County, and Triadelphia Reservoir and also one for Middle River (cw only). Triadelphia Reservoir had a Nashville Warbler (us). Chesterville had a Common Yellowthroat (us). Washington County had a Northern Parula and Middle River had one for count week. Chesterville had a low of 7 Yellow-rumped Warblers (lc). Thirteen was low on Bowie where the species has never been missed over 56 counts (record low is 4). At Loch Raven, 3 was considered low and 1 on Washington County (but the species has been missed on both of those counts). Seneca had a Wilson's Warbler (us; fifth occurrence).

Grosbeaks, Buntings: Loch Raven had 260 Northern Cardinals (lc). Ocean City had a Lazuli Bunting (us).

Table 3. 2022–2023 Maryland Christmas Bird Counts: Inland counts.
(bolded species name = unusual for the Maryland counts; bolded number = high count record; cw = count week)

Species	Oakland	Allegany County	Washington County	Catoctin Mountain	Sugarloaf Mountain	Seneca	Triadelphia Reservoir	Loch Raven	Rock Run	Bowie	Elkton	Chesterville
Snow Goose	2	1			2							8,182
Ross's Goose												1
Greater White-fronted Goose									cw			1
Brant												
Cackling Goose	cw		1		1		3		1		3	4
Canada Goose	2,247	264	814	513	3,492	2,278	5,845	3,137	1,711	4,299	1,524	13,322
Mute Swan												
Trumpeter Swan										**5**		
Tundra Swan	5				8	4			10	20	67	777
Wood Duck	9		3		2	4				17		
Blue-winged Teal										1		
Northern Shoveler						3				37		1
Gadwall	63	4	**26**	3	49	32	3	**98**		9	6	3
Eurasian Wigeon												
American Wigeon	7	1				45		209		2		2
Mallard	331	130	170	45	155	396	271	**209**	290	431	278	1,277
Mallard x American Black Duck					15					1		
American Black Duck	58	4	2		26	16	3	**77**	2	23	21	319
Northern Pintail	1	2	3		1							8
Green-winged Teal	cw		21		16	2		**53**		8		3
Canvasback	cw				1				6		2	
Redhead	cw				16			**238**	cw	1		
Ring-necked Duck	108				14	397	82	1,157	17	272	50	85
Greater Scaup	2							**4**	2			
Lesser Scaup	5					1	1	4	6	1	75	
Greater/Lesser Scaup												
Common Eider												
Surf Scoter	cw											
White-winged Scoter												
Black Scoter												
scoter sp.												
Long-tailed Duck	cw											
Bufflehead	178	4			35	201	62	44	16	10	54	4
Common Goldeneye	1							1	5		1	6
Barrow's Goldeneye												
Hooded Merganser	**523**	6	2		32	73	40	**288**	45	211	132	83
Common Merganser	**193**	22	19		76	40	1,201	**752**	12	4	22	119
Red-breasted Merganser	cw					1				cw		
Ruddy Duck	36	12			3	11	11	2	27	20	**1,105**	10
duck sp.						9						
Northern Bobwhite												3
Wild Turkey	66	51	38		**9**	6	8	9		26		14

Species	Oakland	Allegany County	Washington County	Catoctin Mountain	Sugarloaf Mountain	Seneca	Triadelphia Reservoir	Loch Raven	Rock Run	Bowie	Elkton	Chesterville
Ruffed Grouse	1											
Ring-necked Pheasant								1				
Pied-billed Grebe	6		1		3	3	3	59	1	2	3	
Horned Grebe	27						1	12	cw	1		
Red-necked Grebe					cw							
Rock Pigeon	101	919	472	301	198	376	430	82	47	332	45	261
Mourning Dove	66	95	121	168	421	476	780	88	145	758	124	379
Ruby-throated Hummingbird												
King Rail												
Clapper Rail												
King/Clapper Rail												
Ridgway's/Mangrove/Clapper Rail												
Virginia Rail												1
Rallus sp.												
Sora												
American Coot	18	11			17	20	1	77	3		603	2
Sandhill Crane	5					cw						
American Oystercatcher												
Black-bellied Plover												
Killdeer	**2**	3	2	20	3	6	6	cw	1	38		2
Semipalmated Plover												
Piping Plover												
Marbled Godwit												
Ruddy Turnstone												
Sanderling												
Dunlin												
Purple Sandpiper												
Least Sandpiper												
Western Sandpiper												
peep sp.												
Short-billed/Long-billed Dowitcher												
Long-billed Dowitcher												
American Woodcock						4				8		2
Wilson's Snipe						cw	5		3	19		cw
Spotted Sandpiper												
Lesser Yellowlegs												
Willet												
Greater Yellowlegs												
shorebird sp.												
Bonaparte's Gull									3			
Laughing Gull												
Ring-billed Gull	5				6	211	155	301	1,811	1,897	1,550	277
Herring Gull					9	24		13	58	98	339	18
Iceland Gull												
Lesser Black-backed Gull												
Great Black-backed Gull									27		45	3
gull sp.			5		1	97	1			13	130	
Forster's Tern												

Species	Oakland	Allegany County	Washington County	Catoctin Mountain	Sugarloaf Mountain	Seneca	Triadelphia Reservoir	Loch Raven	Rock Run	Bowie	Elkton	Chesterville
Royal Tern												
Black Skimmer												
Red-throated Loon												
Common Loon	5	1				cw		4				
Northern Gannet												
Great Cormorant												
Double-crested Cormorant						**42**		1	6	cw	3	3
American White Pelican												
Brown Pelican												
American Bittern												
Great Blue Heron	2	4	8	11	32	50	24	18	48	26	24	47
Great Egret												
Tricolored Heron												
Black-crowned Night-Heron									1			
Black Vulture	**5**	3	22	67	**305**	433	159	53	55	229	42	234
Turkey Vulture	**7**	**26**	109	162	219	431	254	146	8	245	156	426
new world vulture sp.						3						
Osprey					**2**							
Golden Eagle		1										
Northern Harrier	1	2		5	3	1	2			1	1	10
Sharp-shinned Hawk	1	3	1		1	13	11	4	1	11	2	4
Cooper's Hawk	**8**	1	2	**11**	8	12	18	8	1	7	2	4
Accipiter sp.					2	5	2					
Bald Eagle	**16**	6	3	14	14	41	41	20	31	50	25	76
Red-shouldered Hawk	1	4	22	30	**95**	100	89	24	10	80	12	23
Red-tailed Hawk	**31**	11	19	55	34	55	38	24	10	33	11	64
Rough-legged Hawk												
Buteo sp.								1				
hawk sp.						3						
Barn Owl												
Eastern Screech-Owl	3	2	2	1	2	1	7		2	4	6	18
Great Horned Owl					cw	10	7	4	1	9	3	22
Barred Owl			2	1	6	12	9		3	13		12
Long-eared Owl												
Short-eared Owl				2								
Northern Saw-whet Owl												1
Belted Kingfisher	2	4	4	11	25	31	27	17	12	**41**	8	10
Red-headed Woodpecker	3			5	3	96						
Red-bellied Woodpecker	**56**	35	68	147	191	370	163	68	50	286	52	73
Yellow-bellied Sapsucker	cw	3	22	25	59	116	39	11	9	41	15	27
Downy Woodpecker	65	34	46	83	170	344	190	73	51	194	42	68
Hairy Woodpecker	19	9	13	18	**54**	80	47	16	9	49	9	30
Northern Flicker	**4**	24	31	69	147	240	144	53	10	245	44	117
Pileated Woodpecker	12	17	34	24	79	99	74	16	10	76	11	**33**
American Kestrel	1	4	8	28	6	5	5	2		9		14
Merlin					cw	1	1			2		1
Peregrine Falcon		1			1		cw			1		
falcon sp.												

Species	Oakland	Allegany County	Washington County	Catoctin Mountain	Sugarloaf Mountain	Seneca	Triadelphia Reservoir	Loch Raven	Rock Run	Bowie	Elkton	Chesterville
Ash-throated Flycatcher				1								
Eastern Phoebe		1	1		**10**	15	1		2	4		6
Blue-headed Vireo												
Blue Jay	**216**	68	205	239	273	703	361	76	76	934	92	268
American Crow	6,491	458	196	146	838	2,663	2,036	408	113	2,588	187	63
Fish Crow					224	1,244	182	98		830	110	2
crow sp.			1	27	1,512	2,652	809	63		5,857		4
Common Raven	**43**	27	**16**	29	**15**	15	**41**	**7**		**15**	**2**	
Carolina Chickadee			322	149	349	809	415	185	96	542	81	325
Black-capped Chickadee	320	74					1		8			
chickadee sp.			1					3				
Tufted Titmouse	150	52	88	128	224	502	270	107	66	429	64	172
Horned Lark	22	51	125	63	1	8	37	4			59	230
Tree Swallow												
Northern Rough-winged Swallow												
Ruby-crowned Kinglet		2	3	5	26	77	6	3	22	41	18	55
Golden-crowned Kinglet	17	6	11	17	70	107	31	13	40	78	12	57
Cedar Waxwing	3	12	27	123	56	394	57	3	23	55	15	
Red-breasted Nuthatch	6	9	1	3	23	7	15	5	1	96		26
White-breasted Nuthatch	103	36	77	124	232	390	264	119	39	**286**	57	103
Brown-headed Nuthatch												
Brown Creeper	14	3	10	12	39	80	16	17	12	28	8	25
Carolina Wren	23	84	22	181	**517**	694	409	181	127	724	97	211
House Wren						2		1	1	2		
Winter Wren	**4**	1	4	8	21	62	33	16	15	50	7	14
Sedge Wren												
Marsh Wren												
Gray Catbird					2	cw	2	**6**	1	5		2
Brown Thrasher						4	3		1	16	**6**	15
Northern Mockingbird	1	30	62	122	175	153	165	81	43	194	68	121
European Starling	596	529	4,144	3,103	2,636	1,955	1,808	1,000	1,536	2,167	882	2,239
Eastern Bluebird	23	84	153	163	347	**988**	599		87	490	68	223
Hermit Thrush		5	5	8	23	65	55	2	9	102	19	45
Wood Thrush									1			
American Robin	17	52	71	138	774	712	783	133	224	870	133	183
House Sparrow	118	75	99	247	272	146	287	197	82	328	151	98
American Pipit	cw			5	49	1					3	136
Evening Grosbeak	44					1						
House Finch	36	22	134	147	189	348	247	85	87	415	62	60
Purple Finch	10		15	3	4	26	5	**20**	2	8		2
Common Redpoll					cw							
Red Crossbill		1										
Pine Siskin			3			1				1		
American Goldfinch	51	77	126	107	157	347	224	107	34	305	56	132
Lapland Longspur											1	**3**
Snow Bunting												
Grasshopper Sparrow							1					1
Chipping Sparrow				2	27	45	13	19		17	3	**81**

Species	Oakland	Allegany County	Washington County	Catoctin Mountain	Sugarloaf Mountain	Seneca	Triadelphia Reservoir	Loch Raven	Rock Run	Bowie	Elkton	Chesterville
Clay-colored Sparrow										1		
Field Sparrow	**5**	13	1	9	40	70	69	**59**	24	88	3	174
Fox Sparrow		**14**		4	2	32	17	4	3	72	2	20
American Tree Sparrow	27	10			2	1			1		1	1
Dark-eyed Junco	**546**	270	572	866	975	1,229	1,470	414	412	1,752	563	1,198
White-crowned Sparrow	17	5	12	31	46	19	6			9		39
Harris's Sparrow												1
White-throated Sparrow	33	160	**1,927**	402	1,203	3,006	2,301	1,103	786	2,961	434	1,859
Vesper Sparrow												1
Seaside Sparrow												
Saltmarsh Sparrow												
Savannah Sparrow				3		17	9	1	16	56	8	165
Savannah Sparrow (Ipswich)												
Song Sparrow	76	88	57	159	485	591	704	301	231	938	159	901
Lincoln's Sparrow										1		
Swamp Sparrow	8	**16**			52	70	23	24	19	158	25	125
Eastern Towhee	1	2		6	15	96	41	29	18	174	9	73
sparrow sp.				8		20						
Eastern Meadowlark		7		5	6	2	7			24		
Red-winged Blackbird	6	26	27	284	173	1,300	589	407	350	1,312	2,408	8,203
Brown-headed Cowbird	1		27	31	742	225	60	78	30	107	43	560
Rusty Blackbird	cw					1	2		3	13		1
Common Grackle	6			1	6	7	63	3	428	3,738	1,063	7,225
Boat-tailed Grackle												
blackbird sp.	30		40			11						1,960
Tennessee Warbler												
Orange-crowned Warbler							1					
Nashville Warbler							1					
Common Yellowthroat	1											1
Northern Parula			1									
Palm Warbler (unspecified)												1
Palm Warbler ("Western")												12
Palm Warbler ("Yellow")												20
Pine Warbler									1	3		1
Yellow-rumped Warbler		8	1	12	22	49	6	3	5	13	19	7
Wilson's Warbler						1						
Northern Cardinal	123	190	313	244	701	1,173	783	260	174	769	144	349
Blue Grosbeak												
Lazuli Bunting												

Table 4. 2022–2023 Maryland Christmas Bird Counts: Tidewater counts. (bolded species name = unusual for the Maryland counts; bolded number = high count record; cw = count week)

Species	Middle River	Annapolis-Gibson Island	Patuxent River	Jug Bay	Point Lookout	Lower Kent County	Denton	Port Tobacco	St. Michaels	Southern Dorchester County	Crisfield	Salisbury	Ocean City
Snow Goose	1			2	cw	11,517	254		28	5,500	500	2	12,155
Ross's Goose						1							1
Greater White-fronted Goose													
Brant											1		1,249
Cackling Goose		2		**11**	2	31			4	**5**			1
Canada Goose	3,112	5,735	2,286	7,883	1,494	33,169	3,795	919	38,460	11,581	1,583	6,308	16,263
Mute Swan	9									1			
Trumpeter Swan	**4**	**2**		cw									
Tundra Swan	55	190	17	59		80	75	25	47	1,724	**1,679**	63	746
Wood Duck				1		4	9		**14**	6	7	4	30
Blue-winged Teal	1												cw
Northern Shoveler	14	1		10		153			**23**	8	10		119
Gadwall	562	30	2	54	2	206	6	5		10	46		383
Eurasian Wigeon													1
American Wigeon	216	3				23			6	1	28		251
Mallard	873	857	217	864	26	4,132	241	51	709	895	239	214	3,028
Mallard x Am. Black Duck						3			1				
American Black Duck	82	15	5	260	2	565	86	8	18	166	378	17	1,112
Northern Pintail	164	1		178		333			1	272	5		60
Green-winged Teal	9	1	1	84	1	611	2		9	15	35	21	291
Canvasback		787			2	287				40	166		28
Redhead		2				120	2				114		84
Ring-necked Duck	303	4	1	98		651	65		1	46	32	43	183
Greater Scaup	**2,628**	220	28	cw	6	327					31		21
Lesser Scaup	**944**	316	8	52	15	3,159	1		17				12
Greater/Lesser Scaup	4	672				2,750							6
Common Eider													1
Surf Scoter		264		89	32	37			92		388		234
White-winged Scoter	1	cw	6		3								10
Black Scoter		13	3	5	211	34			14		35		41
scoter sp.													133
Long-tailed Duck		83	15	5	46	138			413		225		19
Bufflehead	126	1,840	315	449	259	591	22	86	1,281	99	923	91	3,290
Common Goldeneye	2	11	61		31	31			26	6	61	3	
Barrow's Goldeneye					cw								
Hooded Merganser	**613**	112	42	14	13	14	**27**	8	38	138	64	19	303
Common Merganser	5	1		33		1		3		5			1
Red-breasted Merganser	**28**	2		7	2	3			cw	30	1		148
Ruddy Duck	5,057	4,333	627	39	1,206	2,361	14	429	333	18	472	11	180
duck sp.	9					29							
Northern Bobwhite												12	

Species	Middle River	Annapolis-Gibson Island	Patuxent River	Jug Bay	Point Lookout	Lower Kent County	Denton	Port Tobacco	St. Michaels	Southern Dorchester County	Crisfield	Salisbury	Ocean City
Wild Turkey		1	21	1	59	44	68		27		6	21	8
Ruffed Grouse													
Ring-necked Pheasant													
Pied-billed Grebe	18	5		4	4	1	1	2			1	5	11
Horned Grebe	1	9	32	4	10	2			1	5	5		81
Red-necked Grebe													1
Rock Pigeon	298	39	65	35	3	109	105	2	64		271	184	203
Mourning Dove	320	198	135	280	87	405	291	111	417	81	466	245	280
Ruby-throated Hummingbird													1
King Rail										1	3		
Clapper Rail				2									2
King/Clapper Rail													2
Ridgway's/Mangrove/Clapper Rail					2						36	1	
Virginia Rail	2	2		6		8				28	77	5	10
Rallus sp.										2			
Sora		1									7	1	
American Coot	**319**	15	3				1				1	15	29
Sandhill Crane	**68**												
American Oystercatcher													54
Black-bellied Plover											8		372
Killdeer			8	28	41	18	19	3	8	59	292	62	263
Semipalmated Plover				cw									3
Piping Plover													1
Marbled Godwit													2
Ruddy Turnstone													16
Sanderling					11						99		220
Dunlin						1			3	25	275		2,383
Purple Sandpiper				**12**									3
Least Sandpiper				cw									
Western Sandpiper													12
peep sp.				6									7
Short/Long-billed Dowitcher						1							
Long-billed Dowitcher													1
American Woodcock				4	10	5	7			2	7	cw	14
Wilson's Snipe				1	**73**		1		1	**50**	17	7	11
Spotted Sandpiper					1								
Lesser Yellowlegs											1	3	1
Willet													24
Greater Yellowlegs										44	60	20	33
shorebird sp.						2							
Bonaparte's Gull	22	4	3	2	21	2			1		2		16
Laughing Gull	290	1			43								2
Ring-billed Gull	**4,433**	685	1,028	2,270	935	1,100	980	260	463	562	1,099	940	1,347
Herring Gull	810	167	148	1,288	145	147	**1,801**	86	305	598	1,364	198	1,127
Iceland Gull	1												
Lesser Black-backed Gull	2				1	1	1						3
Great Black-backed Gull	68	90	5	43	21	35	3	1	16		22	95	149
gull sp.	157	17		3				99	160			179	

Species	Middle River	Annapolis-Gibson Island	Patuxent River	Jug Bay	Point Lookout	Lower Kent County	Denton	Port Tobacco	St. Michaels	Southern Dorchester County	Crisfield	Salisbury	Ocean City
Forster's Tern					2						4		809
Royal Tern													1
Black Skimmer													cw
Red-throated Loon		2	1	1	2	2			1		4	1	226
Common Loon	1	4	35	7	19	7		2	11	1	18		114
Northern Gannet				cw									132
Great Cormorant							4						2
Double-crested Cormorant	156	5,446	81	55	61	97		376	24		1	116	**291**
American White Pelican										23			4
Brown Pelican			2		3								3
American Bittern											7		cw
Great Blue Heron	46	79	26	41	18	70	18	23	44	55	**168**	34	136
Great Egret									1	1	1		2
Tricolored Heron													1
Black-crowned Night-Heron		cw									20		35
Black Vulture	117	156	89	237	59	162	75	86	112	75	192	157	196
Turkey Vulture	121	230	64	308	232	460	329	189	383	162	584	544	965
new world vulture sp.													
Osprey									1				
Golden Eagle		1				1							
Northern Harrier	**8**			20	1	27	4	5	1	46	57	9	21
Sharp-shinned Hawk	5	9	3	10	2	14	7	2	9	4	5	4	21
Cooper's Hawk	10	13	7	11	4	11	6	4	7	8	8	12	20
Accipiter sp.				1					1				
Bald Eagle	**101**	**72**	33	82	**45**	**202**	66	55	105	129	110	70	128
Red-shouldered Hawk	17	41	31	**44**	**16**	12	25	16	6	9	**29**	**21**	**24**
Red-tailed Hawk	**28**	28	6	30	14	40	36	13	23	15	26	36	42
Rough-legged Hawk											2		
Buteo sp.	4												
hawk sp.													
Barn Owl				6							1		2
Eastern Screech-Owl		15		1	6	27	17	12	30	29	22	21	46
Great Horned Owl		10	2	6	6	19	9	7	41	19	18	16	15
Barred Owl		2		6	**5**	2	10	2	2	5	2	1	
Long-eared Owl										1			
Short-eared Owl			1							6	2		
Northern Saw-whet Owl						1					1		1
Belted Kingfisher	10	43	20	21	10	17	9	17	24	18	50	20	44
Red-headed Woodpecker			1					17	2			2	
Red-bellied Woodpecker	**62**	241	69	157	45	132	47	67	92	54	89	77	107
Yellow-bellied Sapsucker	19	52	17	47	26	19	6	10	19	3	29	16	28
Downy Woodpecker	89	210	65	121	28	58	39	42	62	74	93	60	109
Hairy Woodpecker	11	36	8	29	1	18	13	4	12	8	30	10	25
Northern Flicker	50	112	50	123	48	109	66	47	84	60	126	90	164
Pileated Woodpecker	8	44	16	29	5	13	31	24	13	23	41	23	**52**
American Kestrel	1		8	4	9	9	12	3	2	4	13	19	18
Merlin	1	1	2	1	1	**3**			2		6	2	4
Peregrine Falcon	2	3	**3**	1	1	2				1			3

Species	Middle River	Annapolis-Gibson Island	Patuxent River	Jug Bay	Point Lookout	Lower Kent County	Denton	Port Tobacco	St. Michaels	Southern Dorchester County	Crisfield	Salisbury	Ocean City
falcon sp.				1									
Ash-throated Flycatcher													
Eastern Phoebe	2		3	4	4		1	5		7	7	4	23
Blue-headed Vireo		1						1			1		
Blue Jay	131	640	231	285	56	536	107	271	596	67	135	175	129
American Crow	107	552	264	1,103	341	204	130	237	171	242	723	502	**999**
Fish Crow	283	194	**23**	136			37	13	1	2,475	66	51	147
crow sp.	237	41		140		8		3	33	196	23	521	247
Common Raven	2	3		2				**2**					
Carolina Chickadee	167	411	183	152	81	142	129	71	214	108	314	203	491
Black-capped Chickadee													
chickadee sp.													
Tufted Titmouse	113	372	125	162	46	86	93	111	125	55	**122**	92	263
Horned Lark	2		38	6		85	35			1		4	26
Tree Swallow										17	122		
Northern Rough-winged Swallow	3												
Ruby-crowned Kinglet	**62**	26	36	53	16	44	29	12	42	10	71	39	17
Golden-crowned Kinglet	7	19	70	28	21	31	20	20	31	18	61	78	38
Cedar Waxwing	12	66	77	19	33	81	11	14	365	12	2		121
Red-breasted Nuthatch	9	30	**57**	**54**	25	19	26	4	80	8	45	22	130
White-breasted Nuthatch	73	197	33	110	15	64	**42**	47	**124**	25	**15**	13	22
Brown-headed Nuthatch			1		26	11			33	152	206	29	54
Brown Creeper	6	11	16	9	6	13	7	3	13	13	46	32	18
Carolina Wren	112	556	165	258	96	165	127	108	128	92	**314**	121	439
House Wren		1				1				1	1	1	6
Winter Wren	19	35	7	35	6	9	12	2	3	20	28	12	53
Sedge Wren					2	1					15		2
Marsh Wren						4				6	88	2	6
Gray Catbird	**49**	9	1	7		2	1	1	2	9	22	10	25
Brown Thrasher	6	33	8	20	7	12	8	3	15	4	23	16	26
Northern Mockingbird	72	149	53	88	53	116	74	35	96	34	75	84	145
European Starling	3,574	1,236	1,977	1,063	1,482	3,309	1,892	383	1,167	697	3,318	2,018	8,900
Eastern Bluebird	**85**	434	160	296	184	268	187	168	353	153	295	211	304
Hermit Thrush	53	71	22	72	16	22	41	8	26	26	87	54	53
Wood Thrush													
American Robin	1,119	11,714	1,114	755	1,920	351	393	140	636	604	1,550	1,749	3,469
House Sparrow	195	316	63	166	118	88	127	66	66	17	99	53	279
American Pipit	1			3	3	35	15			27		2	70
Evening Grosbeak													
House Finch	69	263	74	116	24	65	54	70	153	2	94	50	153
Purple Finch	5	2	1	14	1	4	10			1			8
Common Redpoll													
Red Crossbill													2
Pine Siskin								8				1	
American Goldfinch	110	268	125	178	148	131	93	74	196	95	94	80	293
Lapland Longspur						1							
Snow Bunting													5
Grasshopper Sparrow													

Species	Middle River	Annapolis-Gibson Island	Patuxent River	Jug Bay	Point Lookout	Lower Kent County	Denton	Port Tobacco	St. Michaels	Southern Dorchester County	Crisfield	Salisbury	Ocean City
Chipping Sparrow	3	16	27	5	47	31	3	1	10	16	48	144	109
Clay-colored Sparrow													
Field Sparrow	34	16	15	28		81	42	6	11	13	9	13	68
Fox Sparrow	18	18	**12**	11	14	26	**13**	1	16	27	51	47	50
American Tree Sparrow				3		1							
Dark-eyed Junco	461	914	622	591	394	1,004	753	554	941	180	256	891	766
White-crowned Sparrow					1			2			10		
Harris's Sparrow													
White-throated Sparrow	804	1,877	704	1,626	600	1,735	899	437	552	121	587	710	1,264
Vesper Sparrow													3
Seaside Sparrow											14		
Saltmarsh Sparrow											3		7
Savannah Sparrow	**20**	2	23	19	16	102	8		14	119	**178**	27	230
Savannah Sparrow (Ipswich)													14
Song Sparrow	**501**	498	232	369	149	558	206	121	175	445	472	229	693
Lincoln's Sparrow													
Swamp Sparrow	134	74	24	92	34	208	31	12	40	171	641	102	319
Eastern Towhee	19	63	19	66	11	75	9	12	27	23	29	26	49
sparrow sp.	13												
Eastern Meadowlark	10		15		28	19	11	9	1	43	108	65	304
Red-winged Blackbird	2,033	1,257	553	2,379	1,030	12,587	10,397	526	1,010	6,817	35,747	5,221	89,326
Brown-headed Cowbird	32	249	18	82	24	94	359	20	256	150	545	95	10,166
Rusty Blackbird	2	1		114	13	1		12	115	3			26
Common Grackle	403	756	509	5,789	2	34,762	1,692	58	145	22,511	3,811	207	245,812
Boat-tailed Grackle										14	146		
blackbird sp.	3,000	48					650					2,500	13,300
Tennessee Warbler	1												
Orange-crowned Warbler	cw				2	1					1		6
Nashville Warbler													
Common Yellowthroat													
Northern Parula	cw												
Palm Warbler (unspecified)	1			1		1	25				6		2
Palm Warbler ("Western")													5
Palm Warbler ("Yellow")													4
Pine Warbler		cw		3	7	2	5		3	1	6	5	12
Yellow-rumped Warbler	34	22	61	29	36	56	21	55	109	182	867	101	2,369
Wilson's Warbler													
Northern Cardinal	188	693	320	423	155	620	178	149	220	76	298	186	388
Blue Grosbeak							1						
Lazuli Bunting													1

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2023 Maryland Mid-winter Bird Count

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The 2023 Maryland Mid-winter Bird Count was held between 7 January and 29 January over 13 days. Data were submitted for Chesapeake and Ohio Canal National Historic Park (C&O), Fred J. Archibald Audubon Sanctuary (FAAS), Audrey Carroll Audubon Sanctuary (ACAS), as well as Frederick, Carroll, and Howard Counties (Table 1). Kent County did not hold the Mid-winter Bird Count in 2023 due to illnesses.

The C&O locations include the District of Columbia (DC) plus the four counties in Maryland bordering the park's towpath. Overall C&O towpath coverage was 94.5% with county coverage as follows: DC - 100%; Montgomery County - 100%; Frederick County - 100%; Washington County - 90%; and Allegany County - 100%. Data were submitted for all but one of the nine count days. The 2023 count marked the twenty-fourth effort for the count with a gap year in 2017. Additional C&O count compilation information can be found on eBird at: https://ebird.org/tripreport/95168.

Table 1. 2023 Maryland Mid-winter Bird Count: Participating counties, codes, dates, and compilers.

County	Code	Date	Compiler(s)
Chesapeake & Ohio Canal National Historic Park	C&O	21–29 JAN 2022 (8 days)	Josephine Cox, James Speicher
Fred J. Archibald Audubon Sanctuary	FAAS	15 JAN 2023	David Smith
Audrey Carroll Audubon Sanctuary	ACAS	07 JAN 2023	David Smith
Frederick	FR	28 JAN 2023	David Smith
Carroll	CA	14 JAN 2023	Bill Ellis
Howard	HO	04 FEB 2023	Joe Hanfman
Kent	KE	(not run)	Walter Ellison, Nancy Martin

On the 2023 Mid-winter Bird Count, 105 different species and 66,119 individual birds were observed by 157 parties and 209 observers (Table 2). Over the course of the count for all the areas, 395.1 mi (630.3 km) of walking over 404.17 hours were logged; there were 1,563.8 mi (2,516.7 km) of driving over 144.67 hours

reported by Frederick, Carroll, and Howard Counties. For owling, 13.83 hours were logged over 59.48 mi (95.7 km). There were 3.92 hours of biking covering 19 mi (31 km) reported by Frederick County despite the frigid temperatures. Participants logged 33.7 hours and 8.4 hours while feeder observing and stationary observing, respectively. Compared to 2022, there was a slight increase in both parties and observers, from 154 to 157 parties and 192 to 209 observers.

Table 2. 2023 Maryland Mid-winter Bird Count: Summary.

	C&O	FAAS	ACAS	FR	CA	HO	KE	Total
Total Species	77	42	42	87	74	80		105
Total Birds	16,786	514	420	20,128	8,859	19,412		66,119
Start Time		6:42	6:12	4:08	6:20	5:00		
Stop Time		12:58	13:04	17:45	17:45	18:00		
Number of Parties	61	1	1	21	15	58		157
Number of Observers	68	3	3	38	30	67		209
Hours Driving		0	0	61.17	25	58.5		144.67
Miles Driving		0	0	727	356	480.8		1,563.8
Hours Walking	171	6.1	6.27	50.5	44	126.3		404.17
Miles Walking	172.5	4.25	3.45	43.8	51	120.1		395.1
Hours Owling		0.17	0.6	9.16	1	2.9		13.83
Miles Owling		0.63	0.15	42	2	14.7		59.48
Hours Biking		0	0	3.92	0	0		3.92
Miles Biking		0	0	19	0	0		19
Feeder Hours		0	0	1	14	18.7		33.7
Stationary Hours		0	0	0	0	8.4		8.4

Comparisons to prior years are difficult due to the absence of the Kent County data, which comprised 20.1% of 2022's Mid-winter count data. Given this consideration, both parties and observers were stable. However, 66,119 individual birds for 2023 were markedly lower. Adjusting for the missing Kent data by adding 20.1% to the 2023 total would give an expected total of 79,409 individual birds for 2023, far below the 2022 value of 109,405.

Weather conditions for 2023 include reports from C&O, where temperatures were near seasonable norms for the count period of 21–29 January. Precipitation, i.e. rain, or sleet changing to rain, occurred on two days (22 and 29 January) with participants in the field. The strongest winds of the nine-day period, overcast skies, and below normal temps on 23 January affected only a single party surveying 1 mi (1.6 km). Only 24 and 27 January featured abundant sunshine and light to moderate winds. Ice, sleet, and snow prevented counting activity on 25 January. Snow cover was minimal to non-existent. Where water

was present in the canal, it was mostly ice-free by afternoon. The Potomac River was free flowing in all locations. Water condition was clear. River levels averaged 2.82 ft (86 cm) during the count period with less than 1 ft (30 cm) fluctuation as measured at the United States Geological Survey Point of Rocks stream gage.

Carroll County reported brief snow flurries in the morning. Streams were open; ponds were partly frozen or open. Skies were cloudy to overcast both morning and afternoon. Wind was 9–14 mph (14–23 km/h). Temperature was 27–31 °F (-3– -1°C).

Avian highlights this year included a Snow Goose and a Common Loon reported in CA, a Long-Tailed Duck in HO, Black-crowned Night-Heron in C&O, Short-eared Owl in FR. Only HO reported Gray Catbird sightings where C&O, FAAS, FR, and HO included Gray Catbirds in 2022. Another rare sighting in winter, Brown Thrasher, was reported in FR.

Similar to last year, Canada Goose was the most numerous species reported totaling 12,396 individuals, however there was a decrease compared to 2022. The complete list can be found in Table 3. Reports of more than double the number of sightings of Ring-necked Duck, 678, were made compared to 311 in 2022. Sightings of Bufflehead, Common Goldeneye, Hooded Merganser, and Common Merganser were less than in 2022.

The most numerous raptor reported was Red-shouldered Hawk (257) followed closely by Red-tailed Hawk (236). Four species of owls were present; the most numerous were Barred Owl (18) and Great Horned Owl (16). Belted Kingfisher was observed in all count areas except for FAAS.

The 2022 count was a record year for the number of woodpecker species; in 2023, there was a decline in all woodpecker species except Hairy. However, FAAS reported zero Red-headed Woodpecker in 2023 where there were 8 in 2022. There were decreased sightings of Yellow-bellied Sapsucker in most of the counts.

Compared to 2022, winter passerine numbers were relatively stable with only a few increases and sharp decreases. There was a large increase of Blue Jay from 981 in 2022 to 1,604 in 2023. There was a decrease in Cedar Waxwing from 621 to 148. The number of Red-breasted Nuthatch numbers has remained low from 46 in 2021, 10 in 2022, and 12 in 2023. There was a large decrease in Hermit Thrush and American Robin sightings. There was a large decrease in European Starling from 14,735 to 8,385. House Sparrow number remained stable. No Evening Grosbeak were reported this year. Purple Finch sightings increased to 21 from 3 last year; 13 reports of which came from HO. Dark-eyed Juncos

showed a small increase to 3,884 this year, but the numbers stayed similar to the past two years; the total count was 3,374 in 2021 and 3,217 in 2022. There were 5,957 White-throated Sparrow observations made across all count areas, which is a decrease compared to 8,436 in 2022, but the numbers may be stabilizing somewhat compared to 6,992 reported in 2021. There was a large decline in Brown-headed Cowbird; 60 reported only by FR, CA, and HO compared to 987 in 2022.

C&O specific comments: Common Raven continued to be seen along much of the canal with 111 recorded in 63 of 172 checklists. Bald Eagle numbers remained stable, though they were less abundant than for the previous two counts. Cedar Waxwing, Hermit Thrush, American Robin, and Yellow-rumped Warbler were seen in fewer numbers than in 2022, possibly staying in more northern areas because of the mild winter, or, as frugivorous species, because they lacked an adequate food supply in our area this year. Among irruptive species, Red-breasted Nuthatch was reported for the fifth consecutive year, with Purple Finch showing for the third consecutive year. Black-crowned Night-Heron was reported for the first time since the count's resurrection in 2018. Also, since the count's resurrection, Double-crested Cormorant, Great Blue Heron, Hairy Woodpecker, and Winter Wrens were found in record numbers. With regard to abundance, Carolina Wren, recorded in 94% of checklists (162 of 172), were ubiquitous along the canal. Noted at levels ranging from a high of 82% to a low of 71% of all checklists were, in descending order, White-breasted Nuthatch, Downy Woodpecker, Red-bellied Woodpecker, Tufted Titmouse, Northern Cardinal, American Crow, and White-throated Sparrow, with the latter having the highest species total for 2023 at 1,888.

Table 3. 2023 Maryland Mid-winter Bird Count: Observed species.

Species	C&O	FAAS	ACAS	FR	CA	HO	KE	Total
Snow Goose	0	0	0	0	1	0		1
Swan Goose (domestic)	0	0	0	1	0	0		1
Cackling Goose	0	0	0	8	0	1		9
Canada Goose	1,598	77	61	3,937	2,172	4,551		12,396
Mute Swan	0	0	0	1	0	0		1
Tundra Swan	0	0	0	26	0	0		26
Muscovy Duck x Mallard (hybrid)	2	0	0	0	0	0		2
Wood Duck	1	0	0	0	0	2		3
Northern Shoveler	0	0	0	8	0	0		8
Gadwall	9	0	0	13	13	0		35
American Wigeon	2	0	0	3	0	0		5
Mallard	542	0	0	413	37	178		1,170

Species	C&O	FAAS	ACAS	FR	CA	HO	KE	Total
Mallard (domestic type)	0	0	0	1	0	0		1
Mallard x Am. Black Duck (hybrid)	1	0	0	0	0	0		1
American Black Duck	83	0	0	54	6	16		159
Redhead	4	0	0	2	66	0		72
Ring-necked Duck	306	0	0	10	156	206		678
Greater Scaup	0	0	0	1	0	0		1
Lesser Scaup	0	0	0	4	0	0		4
Long-tailed Duck	0	0	0	0	0	1		1
Bufflehead	157	0	0	0	23	20		200
Common Goldeneye	29	0	0	6	0	0		35
Hooded Merganser	33	0	0	2	20	64		119
Common Merganser	513	0	0	50	28	372		963
Ruddy Duck	0	0	0	0	7	1		8
Wild Turkey	38	0	0	56	0	6		100
Pied-billed Grebe	8	0	0	0	0	0		8
Rock Pigeon	400	0	0	688	223	80		1,391
Mourning Dove	67	14	2	476	127	285		971
American Coot	2	0	0	0	3	1		6
Killdeer	0	0	0	30	0	0		30
Ring-billed Gull	662	0	0	0	6	188		856
Herring Gull	2	0	0	0	0	21		23
Great Black-backed Gull	0	0	0	0	0	1		1
gull sp.	18	0	0	0	0	2		20
Common Loon	0	0	0	0	1	0		1
Double-crested Cormorant	28	0	0	0	0	0		28
Great Blue Heron	66	0	0	26	10	16		118
Black-crowned Night Heron	1	0	0	0	0	0		1
Black Vulture	93	2	4	246	78	192		615
Turkey Vulture	201	7	6	518	236	288		1,256
Northern Harrier	0	0	1	4	4	0		9
Sharp-shinned Hawk	2	0	0	5	2	1		10
Cooper's Hawk	6	0	0	8	8	8		30
Accipiter sp.	0	0	0	0	0	1		1
Bald Eagle	51	1	0	16	17	15		100
Red-shouldered Hawk	61	2	2	85	33	74		257
Red-tailed Hawk	42	2	2	132	24	34		236
Buteo sp.	2	0	0	5	0	1		8
hawk sp.	2	0	0	0	0	0		2

Species	C&O	FAAS	ACAS	FR	CA	HO	KE	Total
Eastern Screech-Owl	1	0	0	8	3	1		13
Great Horned Owl	0	4	0	6	3	3		16
Barred Owl	7	2	1	1	1	6		18
Short-eared Owl	0	0	0	1	0	0		1
Belted Kingfisher	64	0	1	27	8	16		116
Red-headed Woodpecker	10	0	0	11	0	0		21
Red-bellied Woodpecker	346	8	5	232	65	190		846
Yellow-bellied Sapsucker	117	2	3	22	8	22		174
Downy Woodpecker	379	5	7	145	68	175		779
Hairy Woodpecker	107	2	2	38	18	54		221
Downy/Hairy Woodpecker	3	0	0	0	0	0		3
Northern Flicker	66	2	2	55	20	86		231
Pileated Woodpecker	192	1	2	36	14	46		291
woodpecker sp.	6	0	0	1	0	0		7
American Kestrel	5	0	0	35	12	0		52
Merlin	1	0	0	1	2	0		4
Peregrine Falcon	1	0	0	1	0	0		2
diurnal raptor sp.	2	0	0	2	0	0		4
Eastern Phoebe	21	0	0	2	1	2		26
Blue Jay	160	10	7	260	52	219		708
American Crow	1,062	16	17	516	948	558		3,117
Fish Crow	137	3	2	169	30	262		603
crow sp.	144	0	0	66	0	213		423
Common Raven	111	1	2	34	18	11		177
Carolina Chickadee	717	14	8	310	93	257		1,399
Black-capped Chickadee	79	0	0	2	0	0		81
Carolina/Black-capped Chickadee	2	0	0	0	0	0		2
Tufted Titmouse	469	10	9	268	72	325		1,153
Horned Lark	0	0	0	203	0	19		222
Ruby-crowned Kinglet	41	0	0	6	0	5		52
Golden-crowned Kinglet	190	6	0	32	31	14		273
Cedar Waxwing	90	0	1	20	37	0		148
Red-breasted Nuthatch	1	0	0	2	6	3		12
White-breasted Nuthatch	479	11	9	229	77	215		1,020
Brown Creeper	107	2	2	18	5	14		148
Carolina Wren	840	18	21	404	88	290		1,661
Winter Wren	108	1	1	14	11	21		156
Gray Catbird	0	0	0	0	0	5		5

Species	C&O	FAAS	ACAS	FR	CA	HO	KE	Total
Brown Thrasher	0	0	0	1	0	0		1
Northern Mockingbird	45	7	6	160	61	124		403
European Starling	687	87	2	4,750	1,237	1,622		8,385
Eastern Bluebird	404	18	7	398	198	378		1,403
Hermit Thrush	16	3	1	1	12	24		57
American Robin	275	9	3	385	49	681		1,402
House Sparrow	173	0	0	567	107	496		1,343
House Finch	35	10	4	312	78	233		672
Purple Finch	5	0	0	1	2	13		21
Pine Siskin	0	0	0	0	0	2		2
American Goldfinch	281	2	6	146	75	84		594
Chipping Sparrow	0	6	0	3	1	13		23
Field Sparrow	12	7	2	27	16	50		114
Fox Sparrow	0	2	2	3	4	11		22
American Tree Sparrow	1	0	0	0	0	0		1
Dark-eyed Junco	782	20	27	1,207	735	1,113		3,884
White-crowned Sparrow	0	0	0	22	4	8		34
White-throated Sparrow	1,888	59	124	825	795	2,266		5,957
Savannah Sparrow	0	0	0	11	0	32		43
Song Sparrow	349	18	27	314	89	604		1,401
Swamp Sparrow	14	0	1	15	2	47		79
sparrow sp.	0	0	0	40	0	0		40
Eastern Towhee	5	0	0	10	12	42		69
Eastern Meadowlark	0	0	0	13	0	9		22
Baltimore Oriole	0	0	0	0	0	1		1
Red-winged Blackbird	60	6	0	227	21	777		1,091
Brown-headed Cowbird	0	0	0	11	7	42		60
Common Grackle	0	1	1	104	90	368		564
blackbird sp.	0	0	0	12	0	0		12
Pine Warbler	0	0	0	0	0	1		1
Yellow-rumped Warbler	51	0	1	15	18	5		90
Northern Cardinal	605	36	26	536	254	708		2,165
passerine sp.	1	0	0	0	0	0		1
Totals	**16,786**	**514**	**420**	**20,128**	**8,859**	**19,412**		**66,119**

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2023 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland

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Two occurrences sum up the spring 2023 raptor migration at Fort Smallwood Park. First, the season was dominated by Turkey Vultures, while totals for most other species were below average. Second, except for one gigantic day of 3,952 migrant raptors, daily counts were relatively low, with no other total daily count exceeding 506 individuals and, except for Turkey Vultures, no single species daily count exceeding 100 individuals. Table 1 displays the counts for spring 2023 for the most common raptor species along with respective percent changes relative to their 5-year (2018–2022) and 10-year (2013–2022) averages.

Table 1. 2023 Common raptor species. The 2023 count and 5-year and 10-year percentage changes.

	Black Vulture	Turkey Vulture	Osprey	Northern Harrier	Sharp-shinned Hawk	Cooper's Hawk	Bald Eagle	Mississippi Kite	Red-shouldered Hawk	Broad-winged Hawk	Red-tailed Hawk	American Kestrel	Merlin	Season Total
2023 Count	273	10,247	399	59	997	235	148	3	166	430	148	169	43	13,350
5-YR % Change	-37	+24	-9	+16	+1	-4	-24	-85	-12	-20	-22	+8	-14	+13
10-YR % Change	-35	+41	-9	0	-7	-3	-21	-80	-11	-19	-27	-19	-14	+22

As reflected in the table, except for Turkey Vultures, all the listed species were at or below their 10-year averages, and most were below their 5-year averages. The Turkey Vulture season total of 10,247 individuals is the second highest historically. Buteos in particular continued their long-term declines. Not well understood is the decline in Black Vultures. Perhaps more are migrating earlier in the year or perhaps their northward expansion is moderating. Competition between Bald Eagles and Ospreys may be adversely impacting their numbers and just recently it has been theorized that lower Atlantic Menhaden (*Brevoortia*

tyrannus) numbers are responsible for a decline in Osprey nesting success (The Center for Conservation Biology 2023). With respect to coverage, the 97-day coverage is the highest on record and the 516-hour coverage was 10% above the 10-year average.

February: The count began on 20 February and the highlight of seven days of coverage in the month was an unexpected 481Turkey Vultures on 24 February. This resulted in a record total of raptor migrants for any day ever in the month of February as well as a record total of raptor migrants for any February month ever.

March: The month sort of plodded along until 26 March when an avalanche of Turkey Vultures, 3,268 to be exact, was tallied, likely prompted by several prior days of westerly and southerly winds. Interestingly, only 88 individuals of other raptor species were counted that day. Needless to say, this represented a daily record of Turkey Vultures (previous record, 1,905 on 20 March 2020) and a record number of raptors for a day (previous record, 2,630 on 16 April 1999). During each of three hours that day, more than 1,000 migrant Turkey Vultures were counted.

April: A mediocre month; the total raptor count for April was more than 16% below the 10-year average. But it was not without excitement as single Swallow-tailed Kites were observed on 11 and 14 April.

May: Unlike last year, May's count was above the 10-year average, by a healthy 28%, with vultures and accipiters the most numerous species. However, only three Mississippi Kites, the May specialty, were observed in May and that was also the total for the season, which is considerably below the 5-year annual average of 20. Prolonged easterly winds in the second half of May and reduced visibility from the Canadian wildfire smoke were the likely causes.

June: Eight days of coverage in June yielded 111 migrant raptors, almost double the 10-year average. Turkey Vultures, Ospreys, and Broad-winged Hawks made up the bulk of the June migration. The season ended on June 11.

Other raptor highlights included fledged young from both offshore Osprey nesting platforms at the Park. Also, on one day, six Bald Eagles were in view at one time and often during the season two were sitting in the same tree. The Park is also fortunate to have several raptor species nesting locally, so observers were often treated to courtship displays of Ospreys, Bald Eagles, Cooper's Hawks, Red-shouldered Hawks, and Red-tailed Hawks, and to their "escorting" migrants out of their territories.

Non-raptor migration is also significant at Fort Smallwood Park. Blue Jays usually fly by in droves and this year was no exception with close to 18,000 individuals counted, including 3,185 on 1 May alone. A Surf Scoter was spotted on 3 April and Seaside Sparrows were observed on 6 April and 12 April. A pair of Blue-winged Teals appeared on 1 May and a Marsh Wren on 4 May. Two Soras were heard calling on 11 May. A flock of 17 Glossy Ibises flew by on 5 June. Finally, a Louisiana Waterthrush was sighted on 13 May, a new species for the Park. The number of bird species observed at Fort Smallwood Park now stands at 287.

The following new species, not previously reported, are for the year 2018: Vesper Sparrow on 14 April and Orange-crowned Warbler and Red Crossbill on 18 April.

An additional note: Two turtle floats were placed on the pond this spring. A few turtles finally warmed up to basking on them, but Canada Geese, Double-crested Cormorants, and Great Blue Herons were the more frequent users.

We continue to be grateful to the staff at Fort Smallwood Park for all they do to aid our counting activities, and for fostering a collegial partnership over the years. Our faithful observers and their efforts are indispensable. Much appreciation goes to observers Sue Ricciardi, Chris Reed, Dan Walker, Lynn Davidson, Hal Wierenga, Ralph Geuder, Cindy Godwin, Fred Shaffer, Hugh Hoffman, Bob Rineer, Cristians Rivas, Paul Fritz, Mark Nelson, John Hoffman, Alan and Sue Young, John Pangborn, Andy Smith, and Andy Francis. Visitors George Jett, Jenny Isaacs, and Karen Blum also assisted with the count.

As they say, this season is "in the books". We can now begin speculating about what might happen in 2024. But predictions about raptor flights never seem to be very accurate, so please join us next season and we will enjoy whatever spectacles of migration come our way!

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American Oystercatcher (*Haematopus palliatus*)

Top: ©**Ellen M. Lawler** – watercolor; based on a photo at Ocean City Inlet, Maryland, 19 JAN 2006; inspired by the oystercatcher's striking plumage in flight; attempted to capture the subtle effect of light (from the right) falling on the bird; painted NOV 2018.

Bottom left: ©**Diane M. Ford** – ink pen and watercolor pencil; Ocean City, Maryland; sketched and painted NOV 2015.

Bottom right: ©**Ikumi Kayama** – traditional transparent watercolor on illustration board; shows a bird with colored leg bands and a federal leg band; commissioned for the 100-year celebration of the USGS Bird Banding Lab 1920–2020; painted 2020.

MARYLAND BIRDLIFE

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